

WHAT IS CLAIMED IS:

1           1.     A microfluidic embryo handling device comprising:  
2                 an embryo transport network having a biological medium for movement of  
3                 embryos inserted therein, said transport network including an approximate embryo scaled  
4                 embryo fluidic channel to facilitate simulated biological rotating of individual embryos  
5                 moving within said fluidic channel.

1           2.     The microfluidic embryo handling device of claim 1, wherein said  
2                 transport network is formed in a wafer and said embryo fluidic channel comprises a  
3                 microchannel in said wafer.

1           3.     The microfluidic embryo handling device of claim 1, further  
2                 comprising:

3                 a biological medium source for introducing said biological medium into said  
4                 embryo transport network in a continuous flow manner; and

5                 a control test embryo network fed said biological medium from said biological  
6                 medium source, said control test embryo network being biologically isolated from said  
7                 embryo transport network.

1           4.     The microfluidic embryo handling device of claim 1, further  
2                 comprising:

3                 a gravity controlled biological medium source for introducing said biological  
4                 medium into said embryo transport network in a continuous flow manner.

1           5.     The microfluidic embryo handling device of claim 1, further comprising  
2 a formation in a path defined by said communication channel for holding an embryo at a  
3 desired location while maintaining flow of said biological medium past an embryo held at  
4 said desired location.

1           6.     The microfluidic embryo handling device of claim 5, wherein said  
2 formation comprises a constriction.

1           7.     The microfluidic embryo handling device of claim 6, further  
2 comprising:  
3           a biological medium source for maintaining flow of said biological medium  
4 and for reversing flow of said biological medium to free an embryo held at said desired  
5 location.

1           8.     The microfluidic embryo handling device of claim 1, wherein said  
2 fluidic channel has a flat bottom.

1           9.     The microfluidic embryo handling device of claim 1, wherein said  
2 fluidic channel has a V-shaped bottom.

1           10.    The microfluidic embryo handling device of claim 1, wherein said  
2 simulated biological rotating includes rotating and slipping.

1 11. The microfluidic embryo handling device of claim 1, further  
2 comprising:

3 a controlled biological medium source for introducing said biological medium  
4 into said embryo transport network in a continuous flow manner unassisted by electrical  
5 stimulus.

1 12. The microfluidic embryo handling device of claim 1, wherein movement  
2 of embryos in said embryo transport network is unassisted by electrical stimulus.

1 13. The microfluidic embryo handling device of claim 1, wherein said  
2 transport network is sealed from surrounding environment and said device further comprises  
3 an embryo entrance to said transport network and an embryo exit from said transport  
4 network.

1 14. The microfluidic embryo handling device of claim 13, wherein said  
2 embryo entrance comprises a hole penetrating a sealing member which seals said transport  
3 network, said hole maintaining separation between said biological medium and surrounding  
4 environment through surface tension.

1 15. The microfluidic embryo handling device of claim 14, further  
2 comprising a removable cover to seal said hole.

1 16. The microfluidic embryo handling device of claim 14, wherein said hole  
2 is funnel shaped.

1                    17.    The microfluidic embryo handling device of claim 14, wherein said hole  
2 is located in a midstream portion of said transport network.

1                    18.    The microfluidic embryo handling device of claim 13, wherein said  
2 embryo entrance comprises a well in fluid communication with said transport network.

1                    19.    The microfluidic embryo handling device of claim 13, wherein said  
2 embryo entrance comprises a hanging drop.

1                    20.    The microfluidic embryo handling device of claim 1, wherein said  
2 fluidic channel comprises an embryo compartment defining a culturing station for an embryo  
3 and said device further comprises smaller than embryo diameter fluid flow channels for  
4 moving fluid through said embryo compartment.

1                    21.    A microfluidic embryo handling device, comprising:  
2 a fluid path for moving an embryo inserted therein by fluid flow unassisted by  
3 electrical stimulus;

4 surfaces defining at least a part of said fluid path and spaced to promote  
5 rotating of said embryo as it moves in said fluid path.

1                    22.    A method of handling embryos comprising steps of:  
2 moving an embryo through exclusive use of fluid flow;  
3 rotating said embryo as said step of moving is executed.